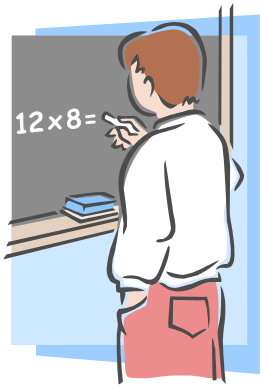


To find common multiples

COMMON MULTIPLES

2	3

10	15

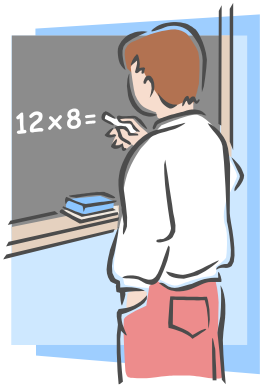
2	5

6	8

8	12

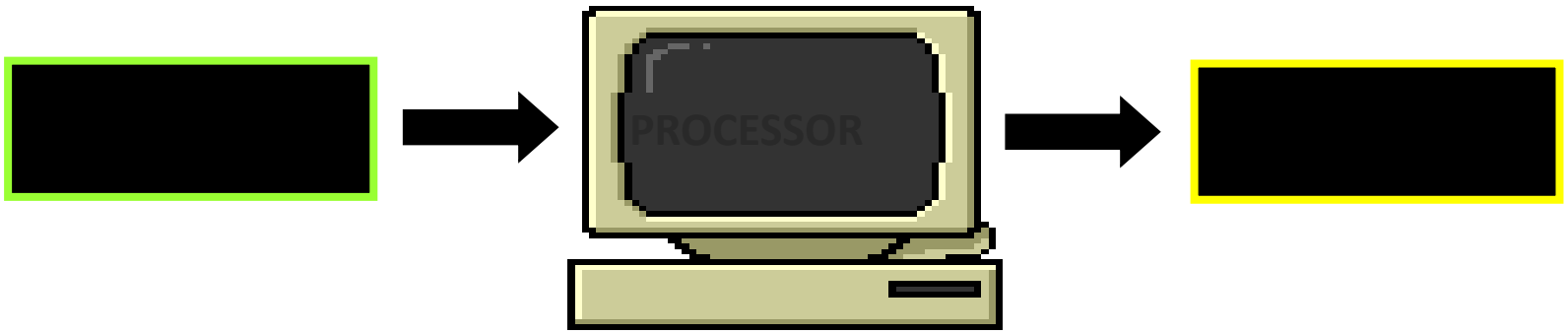
25	30

Learning Objective

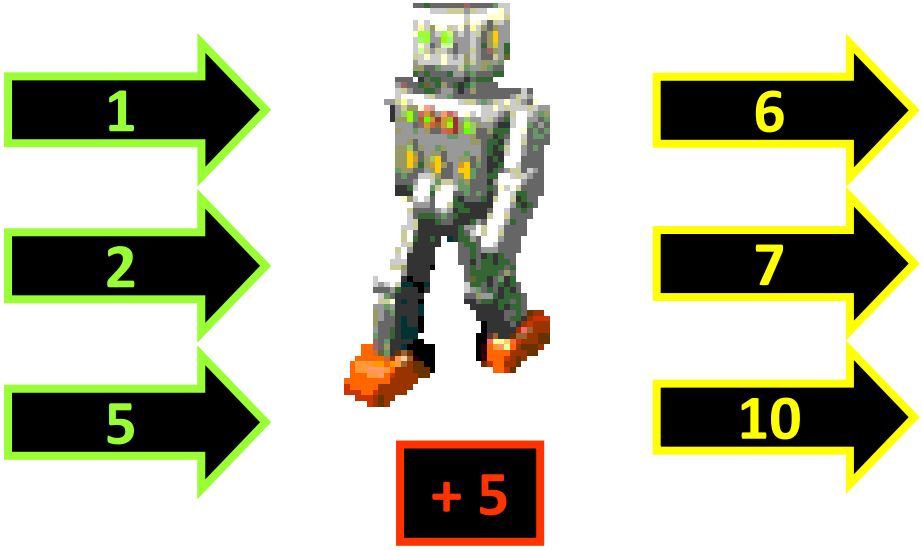


To know to find and extend number sequences and patterns

Single



- Imagine that we have a robot to help us make patterns.



1 2 4 6 8 10 12 14 16

/

2 / 1 3 5 7 9 11 13 15

3/ 25 50 75 100 125 150 175 200

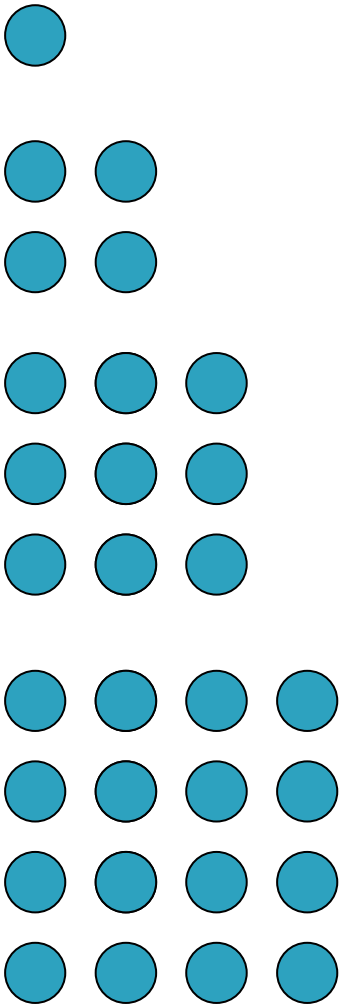
4/ 1 4 9 16 25 36 49 64

5/ 5 9 13 17 21 25 29 33

6/ 8 14 20 26 32 38 44 50

7/ 1 3 6 10 15 21 28 36

Square Numbers



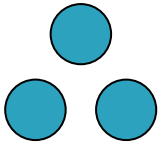
Number in sequence	Number
1st	1
2nd	4
3rd	9
4th	16

Square Numbers

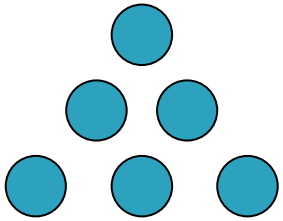
Number in sequence	Number		
5^{th}	25	or	5 x 5
6^{th}	36	or	6 x 6
7^{th}	49	or	7 x 7
8^{th}	64	or	8 x 8
↓	↓		
X^{th}	X x X	or	X^2

Triangular Numbers

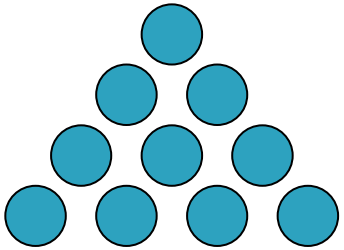
1



3



6

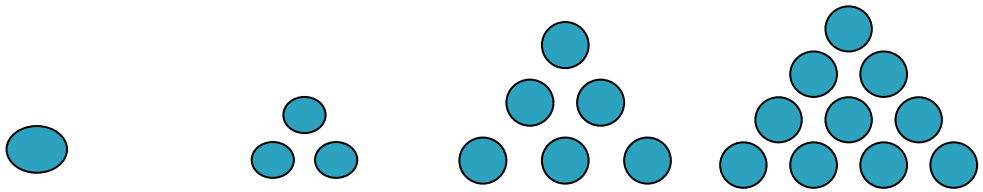


10

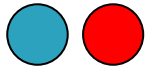
Find the next 5 and describe the pattern
Use your white boards and/or the squared paper.

15, 21, 28, 36, 45…….x?

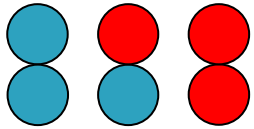
No in sequence	1	2	3	4	5	6
Number	1	3	6	10		



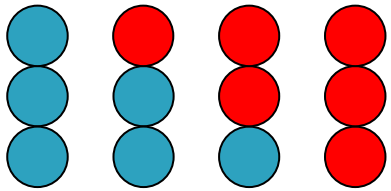
15, 21, 28, 36, 45…….x?



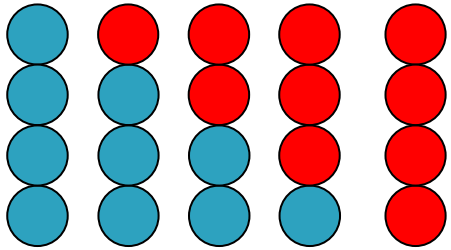
1^{st}/ 1 x 2 = 2



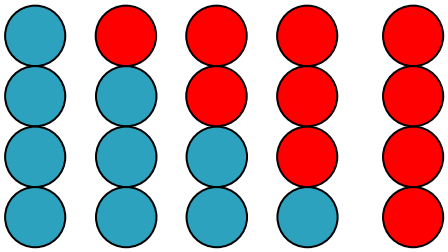
2^{nd}/ 2 x 3 = 6



3^{rd}/ 3 x 4 = 12

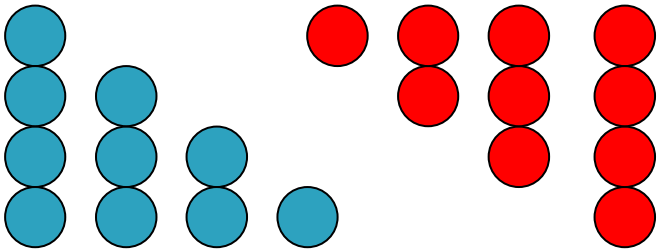


4^{th}/ 4 x 5 = 20

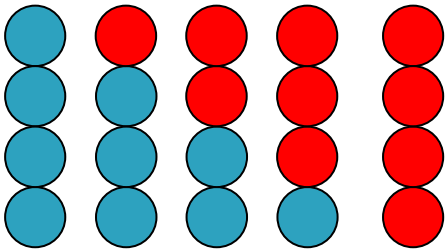


This is the 4th in the sequence

$4 \times 5 = 20$

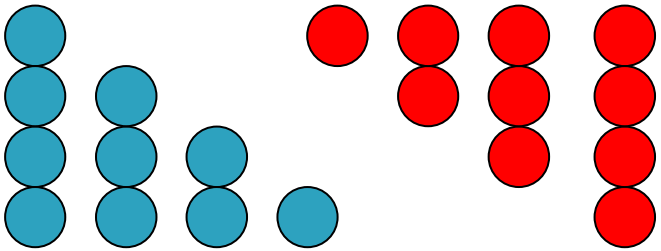


$(4 \times 5) \times \frac{1}{2} = 20 \times \frac{1}{2} = 10$



This is the 4th in the sequence

$4 \times 5 = 20$

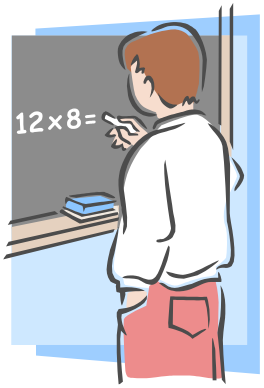


$(4 \times 5) \times ½ = 20 ½ = 10$

So what about the X^{th} number in the sequence?

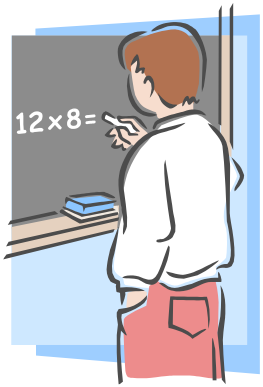
$$X \times (X + 1) \; ½$$

1/	2	4	6	8	10	_____	X x 2
2/	1	3	5	7	9	_____	(X x 2) – 1
3/	25	50	75	100	125	_____	X x 25
4/	1	4	9	16	25		X^2
5/	5	9	13	17	21	_____	(X x 4) + 1
6/	8	14	20	26	32	_____	(X x 6) + 2
7/	1	3	6	10	15		$X \times (X+1) \times ½$



To order decimals with a mixture of 1, 2 and 3dp.

Learning Objective



To represent and interpret information in a pie chart.

Pie Charts

Pie Charts

L.O

Can you read a pie chart?

Success Criteria

By the end of the lesson can you…..

- put a percentage next to a pie chart section?
- match the result to the section on a pie chart?
- work out the number that each section of a pie chart represents?

Pie Charts Starter

Select the correct answer for each of the shape questions below.

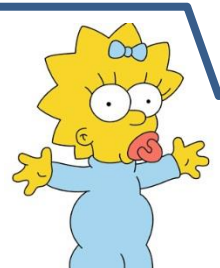
What fraction of the pie chart is coloured red?

A $\frac{1}{2}$

B $\frac{1}{4}$

C $\frac{1}{3}$

D $\frac{1}{8}$



Pie Charts Starter

Select the correct answer for each of the shape questions below.

What fraction of the pie chart is coloured red?

A $\frac{1}{2}$

B $\frac{1}{4}$

C $\frac{1}{3}$

D $\frac{1}{8}$

Pie Charts Starter

Select the correct answer for each of the shape questions below.

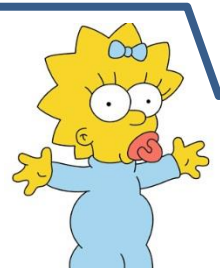
What fraction of the pie chart is coloured blue?

A $\frac{1}{3}$

B $\frac{1}{6}$

C $\frac{1}{4}$

D $\frac{1}{2}$



Pie Charts Starter

Select the correct answer for each of the shape questions below.

What fraction of the pie chart is coloured blue?

A $\frac{1}{3}$

B $\frac{1}{6}$

C $\frac{1}{4}$

D $\frac{1}{2}$

Pie Charts Starter

Select the correct answer for each of the shape questions below.

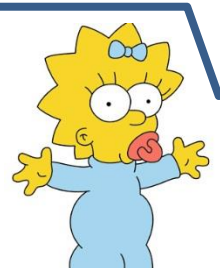
What fraction of the pie chart is coloured Purple?

A $\frac{1}{2}$

B $\frac{1}{8}$

C $\frac{1}{4}$

D $\frac{1}{5}$



Pie Charts Starter

Select the correct answer for each of the shape questions below.

What fraction of the pie chart is coloured Purple?

A $\frac{1}{2}$

B $\frac{1}{8}$

C $\frac{1}{4}$

D $\frac{1}{5}$

Pie Charts Starter

Select the correct answer for each of the shape questions below.

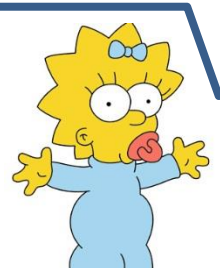
What fraction of the pie chart is coloured orange?

A $\frac{1}{5}$

B $\frac{1}{2}$

C $\frac{1}{10}$

D $\frac{1}{8}$



Pie Charts Starter

Select the correct answer for each of the shape questions below.

What fraction of the pie chart is coloured orange?

A $\frac{1}{5}$

B $\frac{1}{2}$

C $\frac{1}{10}$

D $\frac{1}{8}$

Pie Charts Starter

The method for answering questions such as this is quite simple.

What fraction of the pie chart is coloured red?

$$\frac{1}{4}$$

Count the number of sections that is on the chart.

Write this number on the bottom of a fraction.

Count the number of sections you are being asked about.

Write this number on the top of the fraction.

Pie Charts Starter

Select the correct answer for each of the shape questions below.

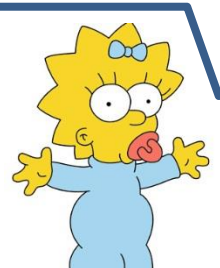
What fraction of the pie chart is coloured blue?

A $\frac{1}{4}$

B $\frac{1}{2}$

C $\frac{1}{6}$

D $\frac{3}{6}$



Pie Charts Starter

Select the correct answer for each of the shape questions below.

What fraction of the pie chart is coloured blue?

A $\frac{1}{4}$

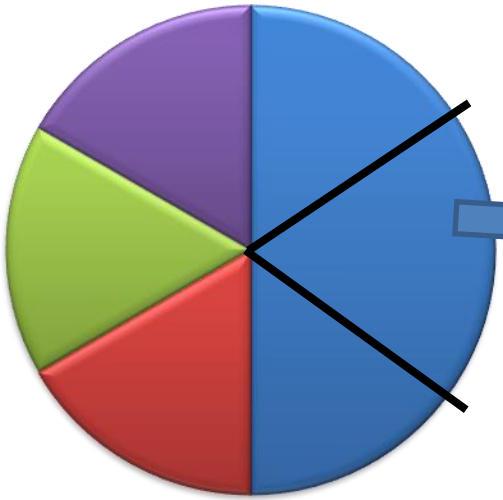
B $\frac{1}{2}$

C $\frac{1}{6}$

D $\frac{3}{6}$

Pie Charts Starter

The method for answering questions such as this is quite simple.



What fraction of the pie chart is coloured blue?

$\frac{3}{6}$ or $\frac{1}{2}$

Split up all sections so that they are made up of the same sized pieces and count them.

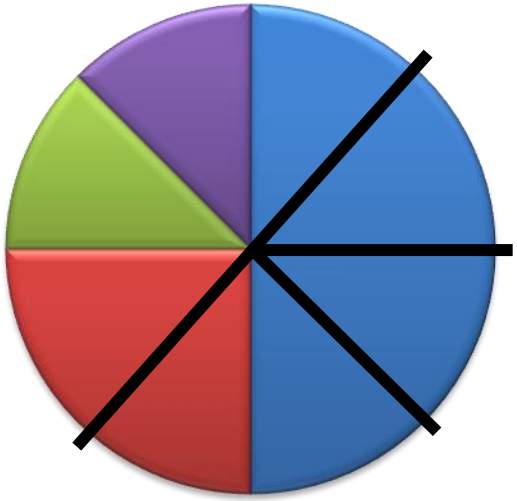
Write this number on the bottom of a fraction.

Count the number of sections you are being asked about.

Write this number on the top of the fraction.

Pie Charts Starter

Select the correct answer for each of the shape questions below.



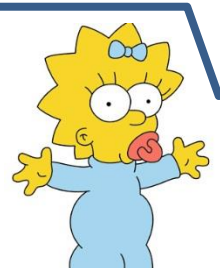
What fraction of the pie chart is coloured red?

A $\frac{1}{8}$

B $\frac{1}{6}$

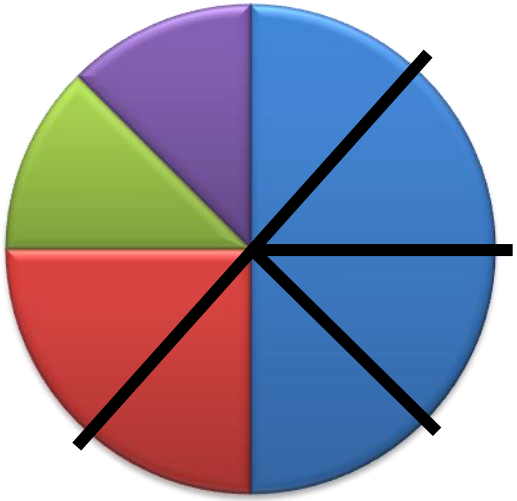
C $\frac{2}{8}$

D $\frac{1}{10}$



Pie Charts Starter

Select the correct answer for each of the shape questions below.



What fraction of the pie chart is coloured red?

A $\frac{1}{8}$

B $\frac{1}{6}$

C $\frac{2}{8}$

D $\frac{1}{10}$

Pie Charts Starter

Select the correct answer for each of the shape questions below.

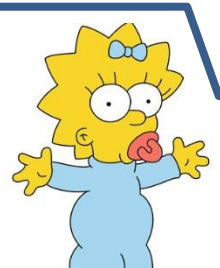
What fraction of the pie chart is coloured green?

A $\frac{3}{10}$

B $\frac{3}{12}$

C $\frac{3}{11}$

D $\frac{3}{15}$



Pie Charts Starter

Select the correct answer for each of the shape questions below.

What fraction of the pie chart is coloured green?

A $\frac{3}{10}$

B $\frac{3}{12}$

C $\frac{3}{11}$

D $\frac{3}{15}$

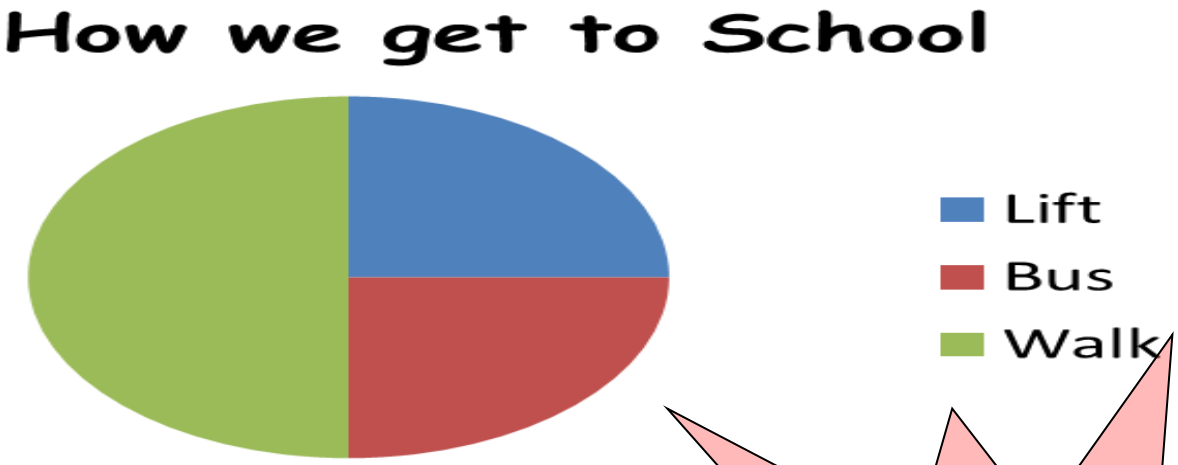
Now let's create our own…

Write down how many letters in your first name on a post it note.

Create a circle by lining up with people who have the same amount of letters as us.

What is the mode?
What is the least common?

Interpreting Pie Charts



This pie chart shows how 20 children got to school.

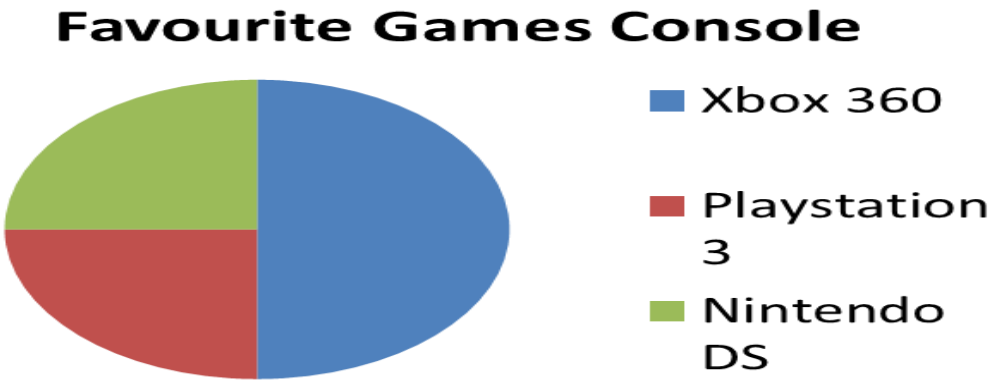
A) How many children walk to school?

B) How many children catch the bus to school?

C) How many children get a lift to school?

Can you show your answer
As a fraction, decimal and
Percentage?

Interpreting Pie Charts



This pie chart shows how 80 children got to school.

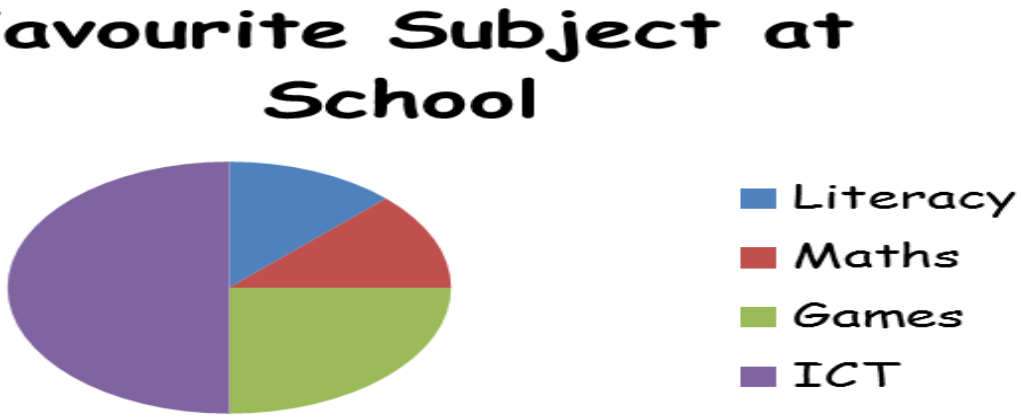
A) How many children prefer xbox?

B) How many children prefer Playstation 3?

C) How many children prefer DS?

Can you show your answer As a fraction, decimal and Percentage?

Interpreting Pie Charts



This pie chart shows 40 children's favourite lessons.

A) How many children 's favourite lesson is ICT?

B) How many children 's favourite lesson is Games?

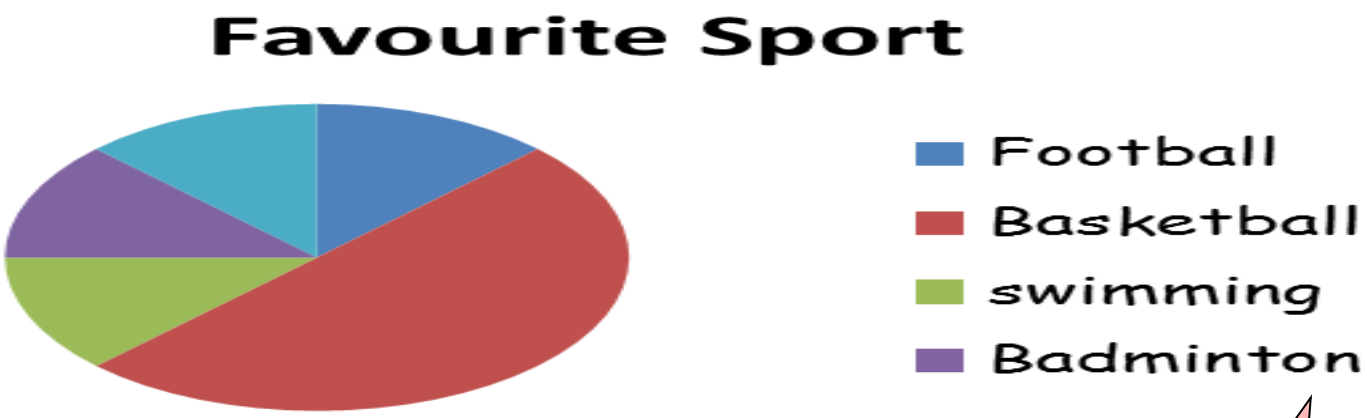
C) How many children 's favourite lesson is Literacy?

D) How many more children like ICT than Literacy?

E) What fraction of the children prefer Maths?

Can you show your answer As a fraction, decimal and Percentage?

Interpreting Pie Charts



This pie chart shows 120 children's favourite sport.

A) How many children 's favourite sport is Football?

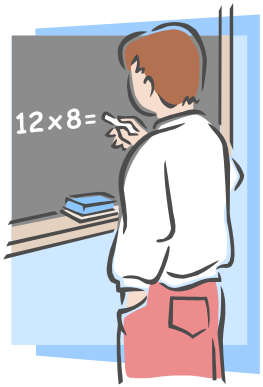
B) How many children 's favourite sport is basketball?

C) If there were twice as many children in the survey how many children 's favourite sport would be swimming?

D) What fraction of the children liked badminton the most?

Can you show your answer As a fraction, decimal and Percentage?

Learning Objective



To find the mean, median, mode and range from a list of numbers.

Telegraph

32. The average age of the oldest starting line-ups in a World Cup game:

When Germany played Iran in the 1998 finals in France, the average age was 31 years and 345 days.

MEAN

The sum of all the values divided by the number of values.

$$\frac{7+8+11+3+11}{5} = \frac{40}{5} = 8$$

MEDIAN

The median is the middle value when they are arranged in size order.

3 7 8 11 11

MODE

The mode is the most common value

3 7 8 11 11

RANGE

The range is difference between the highest and lowest value.

$$11 - 3 = 8$$

Simplified Fractions

To simplify a fraction, we find an equivalent fraction which uses the **smallest numbers possible.**

We do this by **dividing.**

$$\frac{24}{40} \begin{matrix} \div 2 \\ \div 2 \end{matrix} = \frac{12}{20}$$

or

$$\frac{24}{40} \begin{matrix} \div 4 \\ \div 4 \end{matrix} = \frac{6}{10}$$

or

$$\frac{24}{40} \begin{matrix} \div 8 \\ \div 8 \end{matrix} = \frac{3}{5}$$

We need to know our tables for this!
Ask yourself, what can I divide both 24 and 40 by?

8 is the biggest number we can divide both by and 3/5 uses the smallest possible numbers as we cannot divide them by anything else.

Simplified Fractions

9/12

8/10

6/9

12/18

15/40

20/24

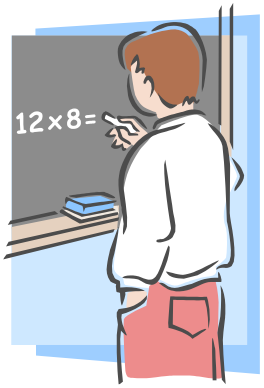
18/30

21/28

14/42

36/100

Learning Objective



To find Prime Factors

Definition

- **Product** – An answer to a multiplication problem.

$$7 \times 8 = 56$$

Product

Definition

- **Factor** – a number that is multiplied by another to give a product.

$$7 \times 8 = 56$$

Factors

Definition

- **Factor** – a number that divides evenly into another.

$$56 \div 8 = 7$$

Factor

What are the factors?

6 x 7 = 42	6 & 7
7 x 9 = 63	7 & 9
8 x 6 = 48	8 & 6
4 x 9 = 36	4 & 9

What are the factors?

$42 \div 7 = 6$ 7

$63 \div 9 = 7$ 9

$48 \div 6 = 8$ 6

$36 \div 9 = 4$ 9

Definition

- **Prime Number** – a number that has only two factors, itself and 1.

7

7 is prime because the only numbers that will divide into it evenly are 1 and 7.

Examples of Prime Numbers

2, 3, 5, 7, 11, 13, 17, 19

Special Note:

One is not a prime number.

Definition

- **Composite number** – a number that has more than two factors.

8

The factors of 8 are 1, 2, 4, 8

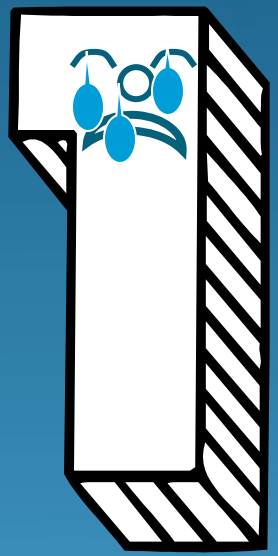
Examples of Composite Numbers

4, 6, 8, 9, 10, 12, 14, 15

Special Note:
Every whole number from 2 on is either composite or prime.

Our Lonely 1

It is not prime because it does not have exactly two different factors.



It is not composite because it does not have more than 2 factors.

Special Note:

One is not a prime nor a composite number.

Definition

- **Prime Factorization** – A way to write a composite number as the product of prime factors.

$$2 \times 2 \times 3 = 12$$

or

$$2^2 \times 3 = 12$$

How to Do Prime Factorization Using a Factor Tree

Step 1 – Start with a composite number.

48

Step 2 – Write down a multiplication problem that equals this number or any pair of factors of this number.

6 x 8 = 48

How to Do Prime Factorization Using a Factor Tree

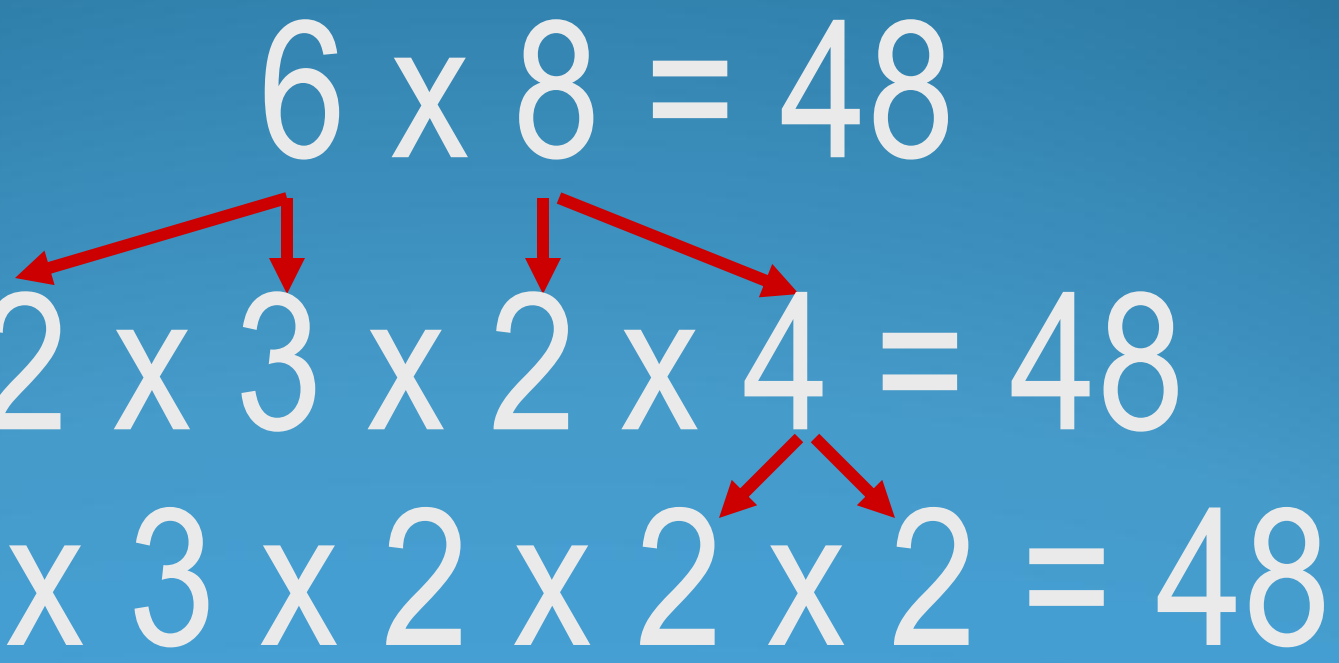
Step 3 – Find factors of these factors.

$$6 \times 8 = 48$$

$$2 \times 3 \times 2 \times 4 = 48$$

How to Do Prime Factorization Using a Factor Tree

Step 4 – Find factors of these numbers until all factors are prime numbers.



How to Do Prime Factorization Using a Factor Tree

Step 5 – Write the numbers from least to greatest.

$$6 \times 8 = 48$$

$$2 \times 3 \times 2 \times 2 \times 2 = 48$$

$$2 \times 2 \times 2 \times 2 \times 3 = 48$$

How to Do Prime Factorization Using a Factor Tree

Step 6 – Count how many numbers are the same and write exponents for them.

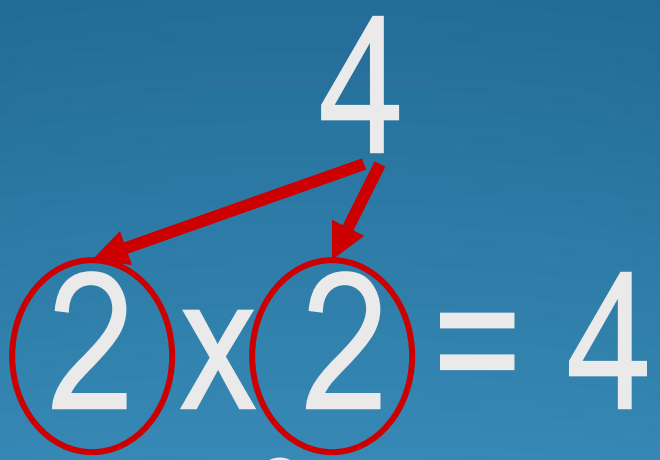
$$6 \times 8 = 48$$

$$2 \times 3 \times 2 \times 2 \times 2 = 48$$

$$2 \times 2 \times 2 \times 2 \times 3 = 48$$

$$2^4 \times 3 = 48$$

Prime factor this number

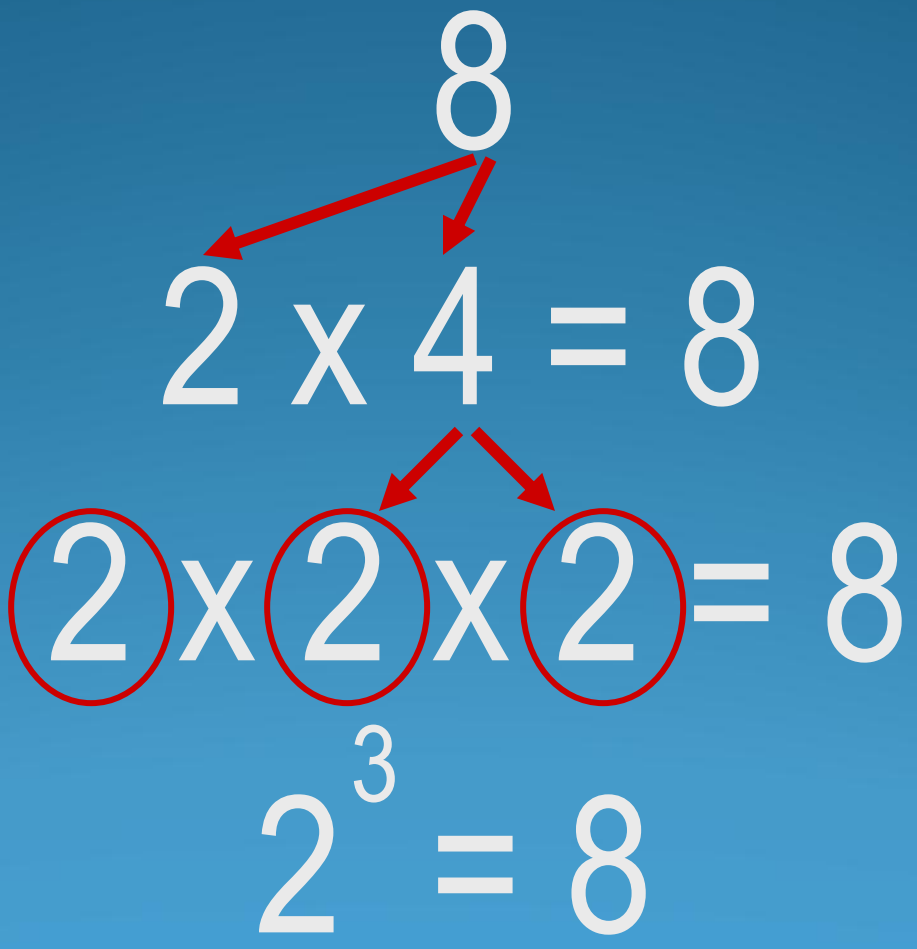


$$2^2 = 4$$

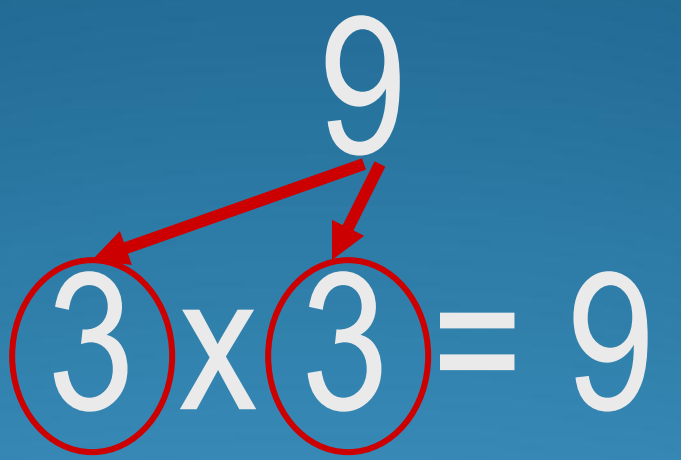
Prime factor this number

$2 \times 3 = 6$

Prime factor this number



Prime factor this number



$3^2 = 9$

Prime factor this number

10

$2 \times 5 = 10$

Prime factor this number

12

$3 \times 4 = 12$

$3 \times 2 \times 2 = 12$

$2 \times 2 \times 3 = 12$

$2^2 \times 3 = 12$

Prime factor this number

14

$2 \times 7 = 14$

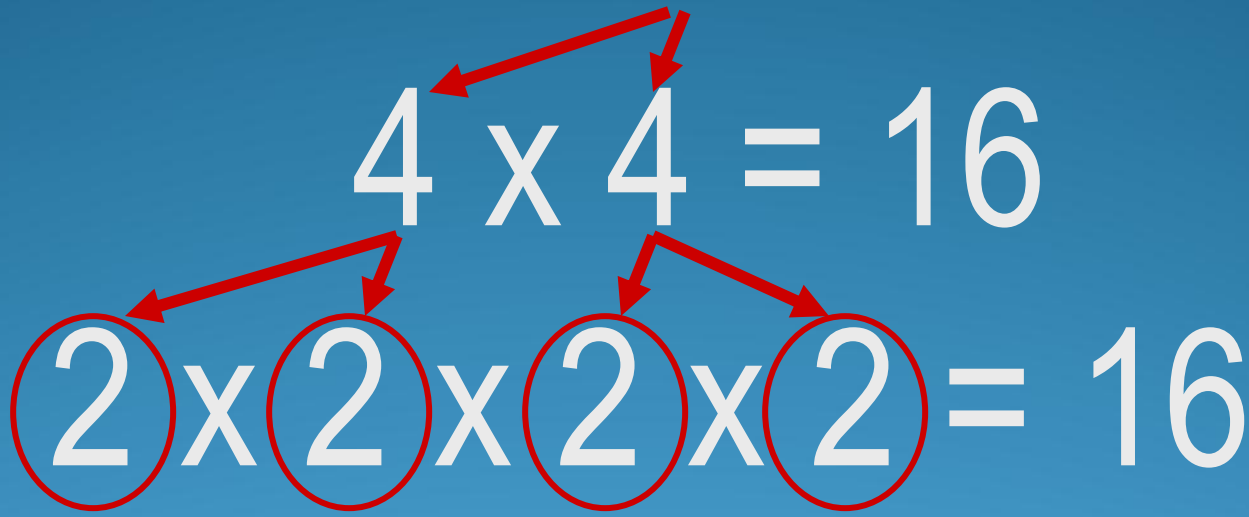
Prime factor this number

15

$3 \times 5 = 15$

Prime factor this number

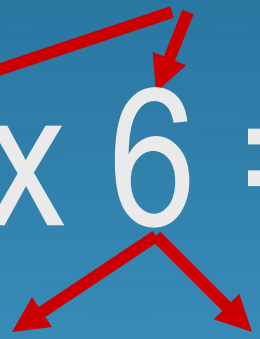
16



$2^4 = 16$

Prime factor this number

18



$3 \times 6 = 18$

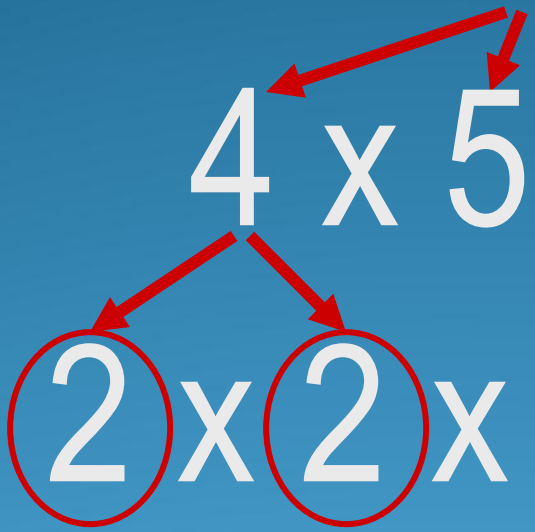
$3 \times 2 \times 3 = 18$

$2 \times 3 \times 3 = 18$

$2 \times 3^2 = 18$

Prime factor this number

20



$4 \times 5 = 20$

$2 \times 2 \times 5 = 20$

$2^2 \times 5 = 20$

Prime factor this number

21

$3 \times 7 = 21$

Prime factor this number

22

$2 \times 11 = 22$